GEOGRAPHIC SCHOOL BULLETINS

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W. SUSCHITZKY, PIX

INCENSE HOLDERS and prayer beads await worshipers in front of a Delhi mosque

Delhi, Capital of India

also —

- Old Delhi's Sidewalk Supermarket
- The Solar System: *1. Earth*
- Southeast Europe's Mighty Danube

UMI

communal laundry outside the city (below).

The old city is bursting its seams—the 30-foot walls put up by long-ago Mogul emperors. Their 300-year-old bricks are being used to build badly needed housing outside the former city limits.

The center of the bustling old town is the Chandni Chauk, Delhi's market place, gossip center, and bargain basement rolled into one (see pages 54-55).

Here, in a confusion of sights, sounds, and smells, Delhi is at its liveliest.

Bullock carts rumble through a sea of pedal rickshaws, buses, and milling pedestrians. Sacred cows garlanded with marigolds wander the pavement while monkeys run chattering across the profusion of wires and balcony signs. Squatting barbers ply their trade on squatting customers and a tired coolie sleeps curled up on his rope bed. Holy men in saffron robes extend their begging bowls and merchants dangle wares from hole-in-the-wall shops. Traffic policemen under black umbrellas try to control the flood.

Blaring brass bands lead both wedding and funeral processions. A waterboy fills his goatskin and a man bathes unconcernedly at the water pump. Silversmiths hammer away in cubbyholes and camels harnessed to carts stand disdainfully beside sacks of rice. An occasional elephant pads by.

The scene belies the fact that Chandni Chauk, literally "silver street," and once the richest street in the world, has been sacked four times. In one terrible night in 1739, 30,000 residents were massacred on orders from Nadir Shah. But even recent history contains a sad chapter of senseless slaughter.

Out of the partition of British India and the creation of the new Moslem state of Pakistan in 1947, fierce riots developed. Thousands of Hindus and Sikhs on the Moslem side of the dividing line fled in terror to Delhi. Murderous vengeance, kindled by these refugees, burst

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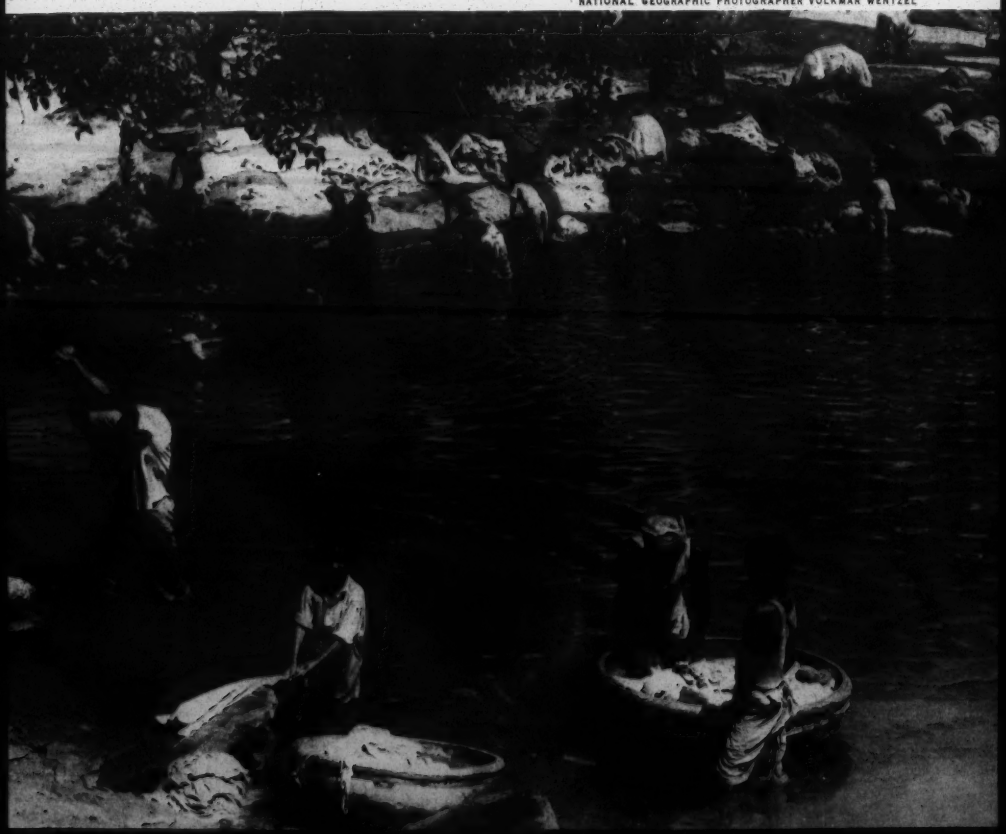

UMI

Old and New Delhi

W. SUSCHITZKY, PIX

NOW THE BLESSED coolness has returned to Delhi, both Old and New. Moslem worshipers (right) thankfully ascend the steps of the Jama Masjid Mosque, while other citizens of India's capital walk or bicycle through the haggle-voiced bazaar.

The teeming quarters of Old Delhi share the bank of the sacred Jumna River with the spacious planned city of New Delhi, founded in 1931 as the capital of a British colony, now the governmental center of independent India.

Delhi is fated. It is the inevitable capital of India—and has been through the centuries whenever the country was under unified control.

Its site is a narrow slot between the great Himalaya range and the sandy plains of Rajputana. It stands as a strategic command post between the lusty civilizations of dry central Asia and the green teeming wealth of the Ganges valley and central India.

So many cities have risen—and fallen—on this site that when New Delhi was being planned one of the chief problems was how to fit it in without destroying the relics of the past.

Old Delhi itself is comparatively new. It merely dates from the 1600's. At least six other cities preceded it. Their tombs and shrines can still be seen scattered through both the new and the old sections.

Almost equidistant from the ports of Calcutta, Bombay, and Karachi, Delhi serves as a railroad hub. A postwar surge in aviation has made it also the air center of the country.

While DC-7's do not seem out of place in the new city, with its parliament building, imposing government offices, race track, and amphitheater, their roar adds a strange note to the babel of the old bazaars and mosques. Their shadows skim over such unchanging scenes as the

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ing heat continues until early October.

As reasonable weather returns, Delhi looks ahead to a series of ancient festivals. A newer holiday, Republic Day, celebrates independence. Jostling crowds line the streets to cheer turbaned troops stepping smartly to Western band music; trade union representatives in business suits march along. In a black-and-gilt horse-drawn coach, the white-clothed President inclines his head and folded hands in a gentle salute. Plaintive Oriental tunes rise as Naga tribesmen parade with spears, while Indian air force jets scream past—the old and new sounds of Old and New Delhi.

INDIA—The Crowded Land New Delhi Governs

A country of 1,267,000 square miles, separated from the rest of Asia by the Himalayas, India holds no less than 392,000,000 people (1957 estimate). Struggling along on an agricultural economy, India is trying to industrialize with the help of both the United States and Russia.

A republic within the British Commonwealth of Nations, it is made up of 14 states and six centrally administered territories. The states are:

Andhra Pradesh: 105,963 square miles, 31,000,000 people. In southeast India, it produces two-fifths of India's tobacco, holds India's only shipbuilding yards.

Assam: 85,012 square miles, 9,000,000 people. Tea is the chief industry.

Bihar: 67,164 square miles, 40,000,000 people. Includes the rice-growing Ganges Valley.

Bombay: 190,919 square miles, 48,000,000 people. The largest state.

Jammu and Kashmir: 85,861 square miles, 4,410,000 people. Kashmir section is constitutionally Indian, but dispute with Pakistan over ownership is before United Nations.

Kerala: 15,035 square miles, 13,500,000 people. Plains hold nearly 1,000 people per sq. mi.

Madhya Pradesh: 171,201 square miles, 26,000,000 people. Six major languages spoken.

Madras: 50,110 square miles, 30,000,000 people. Agriculture occupies most of the residents of this southern state.

Mysore: 74,326 square miles, 19,500,000 population. More than three-fourths of the people make their living from the land.

Orissa: 60,136 square miles, 14,646,000 people. Rice supports four-fifths of the population.

Punjab: 47,456 square miles, 16,000,000 people. "The land of five rivers," Punjab prospers on agriculture dependent on irrigation.

Rajasthan: 132,077 square miles, 16,000,000 people. Large-scale industry planned.

Uttar Pradesh: 113,409 square miles, 63,216,000 people. Drought currently serious.

West Bengal: 34,945 square miles, 26,000,000 population. Industry has replaced agriculture.

INDIAN CIVIL SERVANTS cycle to their jobs past New Delhi's parliamentary rotunda

NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL

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forth on Moslems remaining in secular India.

This religious-political fighting has long since ended, and Moslems live side by side with Hindus, Sikhs, Jains, Christians, and others.

Many of the Old Delhi residents work for the government, and pour into the newer area each morning on bicycles (below) just as government workers converge on Washington, D.C., each morning in automobiles.

Here, too, there is a building boom. The cyclists pass along streets lined with stucco bungalows in neat gardens. Flowering trees provide shade and bright splashes of red, yellow, and lavender.

Beside new apartment houses (right) lawns are mowed by bullock power.

If the workers have a taste for sidewalk superintending, there is plenty of opportunity to indulge it.

Construction projects resemble a cross between a beehive and an anthill, with scores of laborers—both men and women—passing bricks and other materials hand-to-hand up scaffolding of lashed poles.

MELVILLE BELL GROSVENOR

New Delhi has other points of similarity to Washington. It is laid out in broad avenues, with traffic circles at their intersections.

A wide "central vista" corresponds to Washington's Mall. Delhi was carved out of two adjoining states and made a federal city, just as the original District of Columbia was donated by Maryland and Virginia.

Through the central vista runs the Raj Path—known as Kingsway until the name was changed last year and another vestige of colonial days disappeared.

The weather in Delhi is something to write home about. When it's good it's very, very good, but when it's bad it's horrid.

From late October to March few places in the world have more pleasant weather. Nights are crisp, but rarely freezing. Days are bright and clear, with temperatures in the 70's and 80's. Gardens bloom, sahibs go hunting, and children enjoy cricket and other vigorous games.

In April, however, the sun becomes a tyrant as fierce as any Mogul emperor. Those who can, send wives and children to cool mountain resorts for the six-month siege.

Originally, the plan was for the government to do the same thing—to retreat each April, complete with officers, clerks, and files, to the 7,200-foot heights of Simla and return only when cool October came. World War II pressures and governmental expansion ended the annual trek, and the government now stays put—and suffers.

After June there is a little relief, when the monsoon rains cool the city somewhat. On clear days, however, the burn-

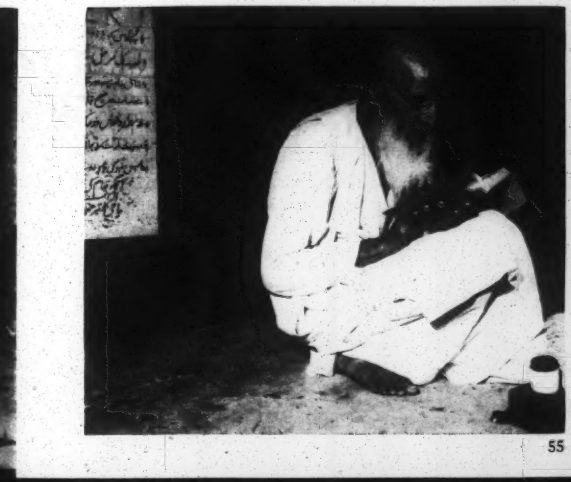
Old Delhi's Bustling Bazaar

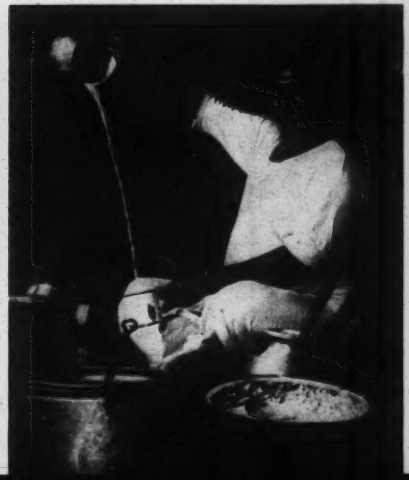
With light hammer strokes, jewelers tap out exquisite works of art in precious metal. Embroiderers stitch delicate needlework. More down-to-earth are the bakers, turning out endless stacks of flat, round "chapatties."

Astrologers perform an important function. The seer at left below will be consulted before the date is set for an important occasion, such as a wedding. He will determine the most auspicious time for the ceremony. He may also help in the selection of a name for a child. Children are rarely named at birth, because the astrologer must figure out, from the positions of stars and planets, what the name should be.

If the shopper feels the need of refreshment after such close contact with the all-governing stars, he may stop for a handmade milk shake (below, right). No machine is needed; the proprietor simply pours the mixture back and forth.

Fruit vendors offer pomegranates (right), many varieties of mangoes, sticks of sugar cane, and bananas. F.S.





PHOTOGRAPHS BY NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL

POPULAR AMONG both shoppers and merchants of the Chauk is *pan*, the Oriental equivalent of chewing gum. A leaf from the betel vine is sprinkled with lime powder or spread with lime paste. An astringent coating made from plants is added. Chopped betel nut and possibly some cardamom top the stack. Then the leaf is folded to mouth size and fastened with a clove. Some Westerners find the chew refreshing; others object to the red stain it leaves on lips and teeth.

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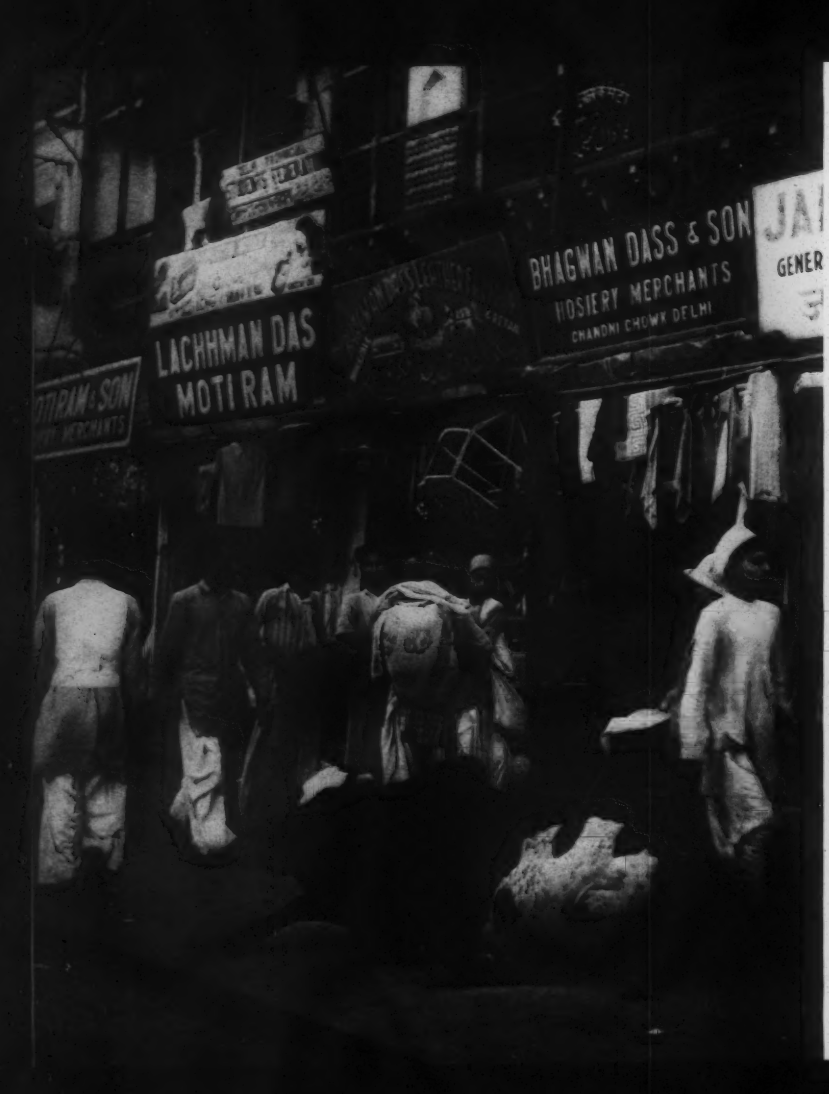


CHANDNI CHAUK—

THE sacred bulls are the only residents of Chandni Chauk that get much chance to laze around. The people of this bustling bazaar that runs through the center of Old Delhi are too busy making, selling, trading, or literally drumming up some business (left).

Lined with tiny workshops and stores, the Chauk offers almost any merchandise or service—from gold to astrology. Merchants without one of the hole-in-the-wall shops display their goods on the sidewalk. Signs are trilingual: English, Urdu, and Hindi.

Out for a day's shopping, customers stroll the Chauk, munching nuts or noodles bought from sidewalk vendors. Pressing through the crush of people, they watch a highly-skilled silversmith working over his curiously-shaped oven (below). Such workers gave the Chauk its name—"Silver Street."

MAYNARD OWEN WILLIAMS, LEFT; NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL

and the closer it is to another, the stronger the pull. A baseball falls because the earth pulls it. But, at the same time, the ball is pulling on the earth. Its effect is so small, however, that it cannot be detected.

Thus all the bodies of the solar system pull on each other. The moon pulls Earth's oceans up into humps, causing the tides. The other planets tug on Earth, causing irregularities in its orbit.

The sun, 1,000 times the size of the largest planet, has a strong enough pull to keep the whole system of planets from scattering into space. At the same time centrifugal force—the "push" created by the circular movement of the planets—balances the sun's pull, and keeps the planets from being sucked into it.

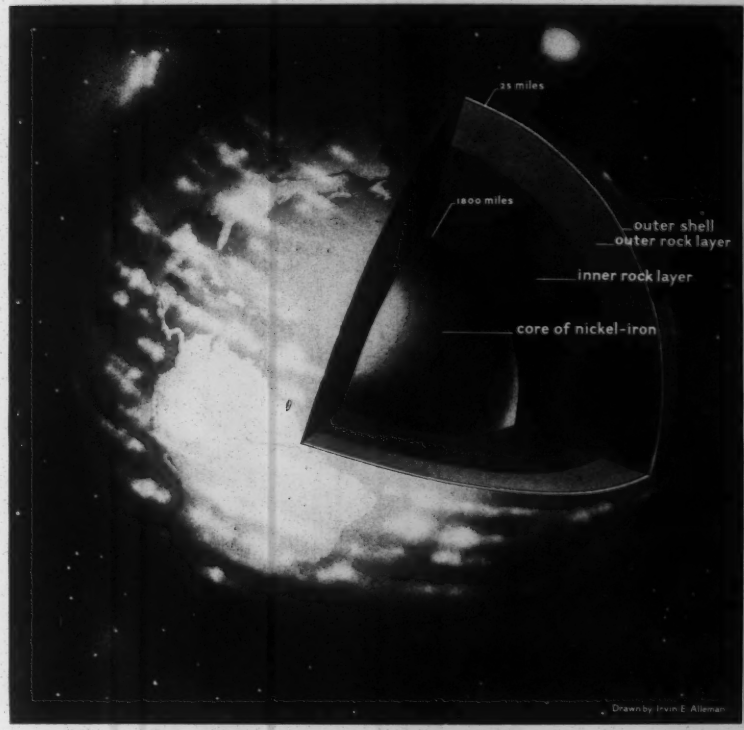
The man who leaves this "space ship" in a smaller imitation will leave behind many unsolved questions about his planet. The biggest poser is where Earth came from in the first place.

When it came is easier to answer. From the rate of decay of uranium in the oldest known rocks it has been calculated that our planet is more than four and one-half billion years old.

But scientists clash on Earth's origin. Some say it and its fellow planets split off from the sun as hot gas or liquid, perhaps by the gravity of a passing star. Then the gas or liquid cooled into a solid. Others believe Earth condensed from a cloud of dust and gas.

The space traveler, as he looks back at Earth, will suddenly realize that it is misnamed. If there are astronomers on Mars, they may well call our home-town planet their equivalent of "Oceanus"—for earth covers less than a third of Earth's surface. The rest is water. F.S.

• To learn more about our planet Earth, see also: *National Geographic Magazine*—August 1958, "How Old Is It?" ($1.00); December 1957, "How Man-made Satellites Can Affect Our Lives" and a wall map of the Heavens ($1.00); March 1956, "Men Who Measure the Earth" ($1.00); February 1956, "The International Geophysical Year: Man's Most Ambitious Study of His Environment" ($1.00); January 1952, "Our Home-town Planet, Earth" ($1.00).



PLAN OF THE PLANET—Cutaway drawing shows structure of Earth as revealed by earthquake waves. The heaviest part, the central core, is about 4,200 miles in diameter. It is under tremendous pressure—up to 25,000 tons to the square inch. Its temperature may reach 5,400 degrees Fahrenheit.

The Solar System, No. 1

OUR PLANET—*EARTH*

IT'S HARD TO REALIZE, but we are already on a "space ship." Our planet, Earth, is rushing through space at 18½ miles a second, carrying 2,900,000,000 of us on yearly trips around the sun.

While looping around the sun, Earth also spins on its axis like a passed football. At the Equator, the spin is faster than 1,000 miles an hour. In addition, the sun itself is rushing through space, taking Earth and the other eight planets with it—and the entire Milky Way Galaxy, of which the sun is a minor star, is spinning. So we are all aboard for the greatest of journeys—and fail even to notice it.

Space ships being designed today are all imitations of the planet. They will try to reproduce Earth's atmosphere, its defenses against deadly radiation, and its temperatures.

As the drawing below shows, Earth, while all-important to us, isn't much in the cosmic scale of things. Although 24,901.96 miles around and 7,926.28 in diameter, it is small in relation to the four larger planets, and tiny in relation to the sun.

Our home-town planet is made up of layers, like an onion. The inner ones are shown in the diagram at right. Others form the atmosphere.

About 20 miles up, a thin layer of ozone gas protects us from ultraviolet rays from the sun which would destroy all life if they reached the surface.

The atmosphere also serves as a guard against meteors—millions of fragments of rock and metal that litter space. Earth moves through clusters of them occasionally. Since they strike with speeds up to 50 miles a second, they would rain death on us except that friction with air molecules burns them up. Only a few of the bigger pieces get through now and then. In the same way, the atmosphere would burn up a space ship unless ways are found to cool it or slow it down.

Man's knowledge of Earth's layers, other than the one he lives in, is fragmentary. He has penetrated the surface about as far as a mosquito would in biting an elephant—approximately five miles of the 4,000-mile distance to the center.

Through measurement of the speeds at which earthquake waves travel, and by estimates of the weight of the planet, scientists conclude that the core is nickel-iron—perhaps liquid or vaporized. The heavy metal may have sunk to the center when Earth was still molten.

Outside it is a layer of lighter basaltic rock. The continents, chiefly made up of granite, float on this like icebergs.

What holds the "onion" together? The somewhat mysterious force called gravity. Any kind of matter—metal, stone, water, air—is attracted to any other matter. The more matter there is in an object,

THE SOLAR SYSTEM

Distances in Millions of Miles from Sun

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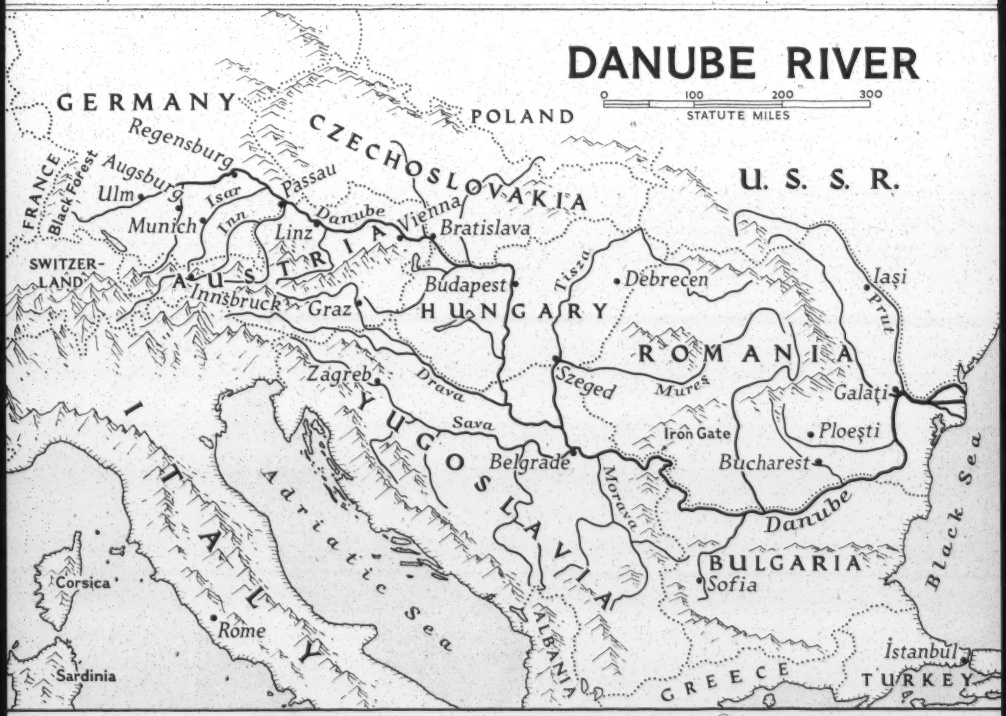

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THE DANUBE drains or touches eight countries, flows past three national capitals—including Hungary's Budapest, below.

LASZLO TH. DE KUBINYI

and its delta equals Rhode Island in size. It drains one tenth of Europe and serves millions of Germans, Austrians, Czechs, Hungarians, Yugoslavs, Romanians, Bulgarians, and Russians.

Naturally, on such a scale, river commerce is considerable. Austria alone, in 1957, shipped or received 2,688,000 tons of goods via the river.

But if by some magic the Danube valley could be tilted the other way the river would feed the raw materials of southeast Europe's farms, forests, and flocks to the factories, cities, and seaports of western Europe.

As it is, the Danube rises just outside the continent's most industrialized section and flows away from it for 1,725 miles, crossing comparatively undeveloped lands on its way to the nearly landlocked Black Sea. River trade is local in origin and destination: German coal, Austrian oil, Hungarian wheat, Balkan mineral oil.

By contrast, the Rhine River, whose headwaters so interlace with the Danube's that a raindrop falling in the Black Forest has a 50-50 chance of reaching either river, flows to the North Sea through Europe's most in-

AUSTRIAN STATE TOURIST DEPARTMENT

THE DANUBE, Geography's Stepchild

THE Danube River has never outlived the problems it was born with. From Mother Earth it inherited a geographic quirk that may always make it a frustrated second-best—it flows the wrong way.

Until man came along this didn't matter—for rivers exist in the planetary sense simply to take the waters falling from the atmosphere and to carry them off to the sea—any sea.

But man uses watercourses that best serve his own ends, and no river that rises in central Europe and flows *east* into an inland sea can fulfill its functions of trade and travel as well as a stream born on the other side of the tracks that bisects industrialized Europe and reaches port on the open Atlantic.

Part of the trouble is man's own doing. Giving geography's stepchild additional whacks, he has carved out two big and six little countries along the Danube—each with its restrictions on trade and movement. No other river in the world squirms through the border bureaucracies of eight violently independent, often warring countries. It's as though the 10 States along the Mississippi had to conclude treaties with one another so that Missouri would let Iowa's corn reach New Orleans and Tennessee would not charge exorbitant tariffs against Louisiana cotton going north.

In past times it was even worse, for then any strong man could build a castle commanding a bend of the river and rob everyone who passed. Many Crusaders bound for the Holy Land found their Christian brothers along the castled Danube to be worse enemies than the Saracens. Dürnstein Castle, the ruined pile in the picture above, is where Richard the Lion Hearted languished, imprisoned by a robber baron on returning from the Crusades.

But considering its handicaps, the Danube has made a pretty good name for itself in the world. Only one river in Europe is longer (the Volga) and none exceeds it in volume of water. It ranks among the 25 great rivers of the world

PHOTO-PRESSE

STURGEON FISHERMEN live on the Danube's many-armed delta beside the Black Sea

tensively developed area. Though less than half as long as the Danube, the Rhine in modern times always has carried at least twice as much commerce.

Also, the Rhine recovered from the war more quickly than the Danube. And it never had to contend with the Iron Curtain. This dividing line between the West and the satellite nations stopped river traffic like a dam. Not until 1956 was Austria able to conclude an agreement with the Soviet Union whereby Austrian ships could travel to the Black Sea.

Regensburg, Germany, is the head of navigation, and smaller boats ply as far upstream as Ulm. The picture-book headwaters dance through Black Forest dells and Bavarian valleys. At Passau, where the Danube crosses into Austria, excursionists embark on the *Franz Schubert* or the *Schoenbrunn* early in the morning to take one of Europe's most romantic river cruises. Past shores lined in spring with plum blossoms, passengers glide below castle-crowned headlands and vineyard-covered slopes. The smokestacks hinge back as the boats pass under bridges. Linz slips past during lunch, and the afternoon is filled with Viennese music. The lights of Vienna sparkle on the Blue Danube as the boats dock at 8:30 in the Austrian capital.

Entering Communist areas, the Danube flows between Czechoslovakia and Hungary and then turns south to bisect the Hungarian plain. Wheat gleams gold in the sun and Magyar herdsmen in shaggy sheepskin robes tend wide-horned cattle.

The plains continue into Yugoslavia, where Belgrade rises above the junction with the Sava. At the rugged Romanian frontier the river surges through the Iron Gate while boats are pulled by locomotives through a safe canal. Soon the delta spreads its swampy islands, mostly in Romania, but bounded on the north by the Soviet Union. Sturgeon fishermen (above) go into the stormy Black Sea for the fish that supplies Russia's caviar.

Galati, at the end of the river, corresponds to New Orleans on the Mississippi Delta. Visitors comment on its "depressed aspect" and note only one or two small sea-going vessels—perhaps all that could be expected of a river with the Danube's problems. R.G.

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